



DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR 17

[Docket No. FWS–R3–ES–2018–0036; FF09E22000 FXES11130900000 212]

RIN 1018–BC80

Endangered and Threatened Wildlife and Plants; Removing *Trifolium stoloniferum* (Running Buffalo Clover) from the Federal List of Endangered and Threatened Plants

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), are removing *Trifolium stoloniferum* (running buffalo clover) from the Federal List of Endangered and Threatened Plants on the basis of recovery. This determination is based on a thorough review of the best available scientific and commercial data, including comments received, which indicate that the threats to running buffalo clover have been eliminated or reduced to the point that the species no longer meets the definition of an endangered species or a threatened species under the Endangered Species Act of 1973, as amended (Act).

DATES: This rule is effective [INSERT DATE 30 DAYS AFTER DATE OF FEDERAL REGISTER PUBLICATION].

ADDRESSES: This final rule, the post-delisting monitoring (PDM) plan, supporting documents, and the public comments received on the proposed rule are available on the Internet at <http://www.regulations.gov> under Docket No. FWS–R3–ES–2018–0036.

FOR FURTHER INFORMATION CONTACT: Patrice Ashfield, Field Supervisor, U.S. Fish and Wildlife Service, Ohio Ecological Services Field Office, 4625 Morse Road, Suite 104, Columbus, OH 43230; telephone 614–416–8993. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Act, a species may be removed from the Federal List of Endangered and Threatened Plants (List) if it is determined that the species has recovered and no longer meets the definition of an endangered or threatened species. Removing a species from the List can be completed only by issuing a rule.

What this document does. This rule removes the running buffalo clover (*Trifolium stoloniferum*) from the List in title 50 of the Code of Federal Regulations (50 CFR 17.12(h)) based on its recovery.

The basis for our action. Under the Act, we determine that a species is an endangered species or a threatened species based on any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We must consider the same factors when removing a species from the List (i.e., “delisting” a species). We may delist a species if we find, after conducting a status review based on the best scientific and commercial data available, that: (1) The species is extinct; (2) the species does not meet the definition of an endangered species or a threatened species (e.g., because it has recovered); or (3) the listed entity does not meet the statutory definition of a species (50 CFR 424.11(e)). We have determined that the running buffalo clover is not in danger of extinction now nor likely to become so in the foreseeable future based on a comprehensive review of its status and listing factors. Accordingly, we have determined that the species may be delisted based on recovery as a result of: (1) An increase in the number of known populations; (2) resiliency to existing and potential threats; (3) the implementation of management agreements to maintain suitable habitat for the species; and (4) protection on public lands.

Peer review and public comment. We evaluated the species’ needs, current conditions,

and future conditions to prepare our August 27, 2019, proposed rule (84 FR 44832). We sought and evaluated comments from independent specialists to ensure that our determination is based on scientifically sound data, assumptions, and analyses. We also invited these peer reviewers to comment on the draft PDM plan. We considered all comments and information we received during the public comment period on the proposed delisting rule and the draft PDM plan when developing this final rule.

Previous Federal Actions

We published a final rule listing running buffalo clover as an endangered species under the Act on June 5, 1987 (52 FR 21478). The Running Buffalo Clover Recovery Plan (Service 1989) was approved on June 8, 1989, and revised in 2007 (72 FR 35253, June 27, 2007).

Running buffalo clover was included in a cursory 5-year review of all species listed before January 1, 1991 (56 FR 56882, November 6, 1991). The 5-year review did not result in a recommendation to change the species' listing status. We completed comprehensive 5-year reviews of the status of running buffalo clover in 2008, 2011, and 2017 (Service 2008, 2011, 2017). These reviews recommended reclassification from endangered to threatened status, based on achievement of the recovery criteria at that time.

On August 27, 2019, we proposed to delist the running buffalo clover due to recovery (84 FR 44832). In that document, we requested information and comments from the public and peer reviewers regarding the proposed rule and the draft PDM plan for running buffalo clover.

Summary of Changes from the Proposed Rule

In preparing this final rule, we reviewed and fully considered all comments we received during the comment period from the peer reviewers, States, and public on the proposed rule to delist running buffalo clover (84 FR 44832, August 27, 2019). As a result, we incorporated new information into *Distribution*, *Habitat*, and *Biology* under **Background** in this final rule. We also updated the number of populations with management agreements that meet delisting criterion 3 and reassessed the species' status in light of that modification.

Background

The following discussion contains updates to the information that was presented in the proposed rule to remove running buffalo clover from the List. A thorough discussion of the species' description, habitat, and life history is also found in the proposed rule.

Taxonomy and Species Description

Running buffalo clover is a member of the Fabaceae (pea) family. This short-lived perennial forms long runners (stolons) from its base and produces erect flowering stems, 10–30 centimeters (cm) (4–12 inches (in)) tall. The flower heads are round and large, 9–12 millimeters (mm) (0.3–0.5 in). Flowers are white, tinged with purple.

Distribution

The known historical distribution of running buffalo clover includes Arkansas, Illinois, Indiana, Kansas, Kentucky, Missouri, Ohio, and West Virginia (Brooks 1983, pp. 346, 349). There were very few reports rangewide between 1910 and 1983. Prior to 1983, the most recent collection had been made in 1940, in Webster County, West Virginia (Brooks 1983, p. 349). The species was thought extinct until it was rediscovered in 1983, in West Virginia (Bartgis 1985, p. 426). At the time of listing in 1987, only one population was known to exist, but soon afterward, several additional populations were found in Indiana, Ohio, Kentucky, and West Virginia. Populations were rediscovered in the wild in Missouri in 1994 (Hickey 1994, p. 1). A single population was discovered in Pennsylvania in 2017 (Grund 2017) with additional populations discovered since then.

One hundred seventy-five extant populations of running buffalo clover are known from three ecoregions, as described by Bailey (1998): Hot Continental, Hot Continental Mountainous, and Prairie. These include 15 occurrences in Ohio and Pennsylvania that have either been discovered or of which we have been notified since publication of the proposed delisting rule. For recovery purposes, the populations are divided into three regions based on proximity to each other and overall habitat similarities. These regions are Appalachian (West Virginia,

southeastern Ohio, and Pennsylvania), Bluegrass (southwestern Ohio, central Kentucky, and Indiana), and Ozark (Missouri). The majority of populations occur within the Appalachian and Bluegrass regions.

Habitat

Running buffalo clover typically occurs in mesic (moist) habitats with partial to filtered sunlight and a prolonged pattern of moderate, periodic disturbance, such as grazing, mowing, trampling, selective logging, or flood-scouring. Populations have been reported from a variety of habitats, including mesic woodlands, savannahs, floodplains, stream banks, sandbars (especially where old trails cross or parallel intermittent streams), grazed woodlots, mowed paths (e.g., in cemeteries, parks, and lawns), old logging roads, jeep trails, all-terrain vehicle trails, skid trails, mowed wildlife openings within mature forest, and steep ravines. Running buffalo clover occurs in a wide range of soil types, with calcium often the dominant base in the soil (Hattenbach 1996, p. 53). Running buffalo clover is often found in regions with limestone or other calcareous bedrock underlying the site, although limestone soil is not a requisite determining factor for the locations of populations of this species. For example, new populations of running buffalo clover have been discovered in West Virginia in areas with soil derived from new geological units (WVDNR 2019, *in litt.*).

Sites that have not been disturbed within the last 20 years are unlikely to support running buffalo clover (Burkhart 2013, p. 158) because the species relies on periodic disturbances to set back succession and open the tree canopy to create and maintain the partial to filtered sunlight it requires. These disturbances can be natural (for example, tree falls and flood scouring) or anthropogenic (such as grazing, mowing, trampling, low-intensity disturbance from counting and monitoring, or selective logging) in origin. Although tree harvest disturbances that reduce canopy cover may cause a temporary decline in running buffalo clover, populations usually increase 2 years later (Madarish and Schuler 2002, p. 127) and reach their highest density 14 years after disturbance (Burkhart 2013, p. 159). However, a complete loss of forest canopy can

be detrimental to running buffalo clover by allowing in too much sunlight and altering the microclimate.

Biology

Substantial variability in the growth and development of running buffalo clover has been documented, but the plant structure usually includes rooted crowns (rosettes that are rooted into the ground) and stolons (above-ground creeping stems) that connect several rooted or unrooted crowns, which eventually separate to leave “daughter” plants. Because of this stoloniferous growth form, individual plants can be difficult to distinguish. The Running Buffalo Clover Recovery Plan defines an individual plant as a rooted crown (Service 2007, p. 1). Rooted crowns may occur alone or be connected to other rooted crowns by runners.

Flowering typically occurs between mid-May and June. However, plants at higher elevations in the mountains of West Virginia may bloom as late as mid-July (WVDNR 2019, *in litt.*). Flowers are visited by a variety of bee species (*Apis* spp. and *Bombus* spp.) and are cross-pollinated under field conditions (Taylor *et al.* 1994, p. 1,099). Running buffalo clover is also self-compatible (capable of pollinating itself); however, it requires a pollinator to transfer the pollen from the anthers to the stigma (Franklin 1998, p. 29). Although it may set fewer seeds by self-pollination than by outcrossing, the selfed seed set may be adequate to maintain the species in the wild (Taylor *et al.* 1994, p. 1,097). Selfed seeds have been shown to germinate well and develop into vigorous plants (Franklin 1998, p. 39).

Seeds typically germinate during early spring (mid-March to early April) when temperatures are between 15 and 20 degrees Celsius (°C) (59–68 degrees Fahrenheit (°F)) during the day and 5 to 10 °C (41–50 °F) at night. Spring temperature fluctuations appear to be a major dormancy breaker in natural populations of running buffalo clover (Baskin 2004).

Scarification may aid in seed germination and seed dispersal. Scarification of seeds by the digestive system of herbivores, historically believed to be bison, deer, elk, or small herbivores such as rabbits or groundhogs, was likely an important process in natural populations

(Thurman 1988, p. 4; Cusick 1989, pp. 475–476). Although deer are viable vectors for running buffalo clover seeds, the survival and germination rates of ingested seeds are low (Ford *et al.* 2003, pp. 426–427). Dispersal and establishment of new populations of running buffalo clover by white-tailed deer herbivory may not be significant (Ford *et al.* 2003, pp. 426–427). It appears that scarification accelerates the germination process, whereas natural germination may occur over time if the right temperature fluctuations occur (Service 2007, p. 9).

Genetics

Running buffalo clover has relatively low levels of diversity and low levels of gene flow between populations, even between those separated by short distances (Hickey and Vincent 1992, p. 15). Much of the genetic diversity observed in running buffalo clover occurs across different populations, and small populations of running buffalo clover contribute as much to the total species' genetic diversity as large populations (Crawford *et al.* 1998, p. 88).

Recovery Criteria

Section 4(f) of the Act directs us to develop and implement recovery plans for the conservation and survival of endangered and threatened species unless we determine that such a plan will not promote the conservation of the species. Recovery plans must, to the maximum extent practicable, include “objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions of this section [section 4 of the Act], that the species be removed from the list.”

Recovery plans provide a roadmap for us and our partners on methods of enhancing conservation and minimizing threats to listed species, as well as measurable criteria against which to evaluate progress towards recovery and assess the species' likely future condition. However, they are not regulatory documents and do not substitute for the determinations and promulgation of regulations required under section 4(a)(1) of the Act. A decision to revise the status of a species, or to delist a species, is ultimately based on an analysis of the best scientific and commercial data available to determine whether a species is no longer an endangered species

or a threatened species, regardless of whether that information differs from the recovery plan.

There are many paths to accomplishing recovery of a species, and recovery may be achieved without all of the criteria in a recovery plan being fully met. For example, one or more criteria may be exceeded while other criteria may not yet be accomplished. In that instance, we may determine that the threats are minimized sufficiently and the species is robust enough to delist. In other cases, recovery opportunities may be discovered that were not known when the recovery plan was finalized. These opportunities may be used instead of methods identified in the recovery plan. Likewise, information on the species may be learned that was not known at the time the recovery plan was finalized. The new information may change the extent to which existing criteria are appropriate for recognizing recovery of the species. Recovery of a species is a dynamic process requiring adaptive management that may, or may not, follow all of the guidance provided in a recovery plan.

The revised recovery plan for running buffalo clover (Service 2007, p. 24) states that the ultimate goal of the recovery program is to delist running buffalo clover. The plan provides three criteria for reclassifying running buffalo clover from endangered to threatened status (*i.e.*, to “downlist” the species) and three criteria for delisting running buffalo clover. All of the downlisting criteria have been met since 2008 (Service 2008, pp. 3–4; Service 2011, pp. 3–4; Service 2017, pp. 3–5). The following discussion provides an assessment of the delisting criteria as they relate to evaluating the status of this species.

Criterion 1 for Delisting

Criterion 1 states that 34 populations, in total, are distributed as follows: 2 A-ranked, 6 B-ranked, 6 C-ranked, and 20 D-ranked populations across at least 2 of the 3 regions in which running buffalo clover occurs (Appalachian, Bluegrass, and Ozark). The number of populations in each rank is based on what would be required to achieve a 95 percent probability of persistence within the next 20 years; this number was doubled to ensure biological redundancy across the range of the species. Rankings refer to the element occurrence (EO) ranking

categories.

EO rankings, which integrate population size and habitat integrity, are explained in detail in the recovery plan (Service 2007, pp. 2–3). In summary, A-ranked populations are those with 1,000 or more naturally occurring rooted crowns; B-ranked populations have between 100 and 999 naturally occurring rooted crowns; C-ranked populations have between 30 and 99 naturally occurring rooted crowns; and D-ranked populations have between 1 and 29 naturally occurring rooted crowns.

Populations are currently distributed as follows: 18 A-ranked, 47 B-ranked, 40 C-ranked, and 70 D-ranked, and they occur in all three regions across the range of the species. Thus, we conclude that this criterion has been substantially exceeded.

Criterion 2 for Delisting

Criterion 2 states that for each A-ranked and B-ranked population described in criterion 1, population viability analysis (PVA) indicates 95 percent probability of persistence within the next 20 years, or for any population that does not meet the 95 percent persistence standard, the population meets the definition of viable. For delisting purposes, viability is defined as: seed production is occurring; the population is stable or increasing, based on at least 10 years of censusing; and appropriate management techniques are in place.

Seven A-ranked and 14 B-ranked populations are considered viable, based on a PVA or 10 years of data. Thus, we conclude that this criterion has been exceeded.

Criterion 3 for Delisting

Delisting criterion 3 states that the land on which each of the 34 populations described in delisting criterion 1 occurs is owned by a government agency or private conservation organization that identifies maintenance of the species as one of the primary conservation objectives for the site, or the population is protected by a conservation agreement that commits the private landowner to habitat management for the species.

This criterion was intended to ensure that habitat-based threats for the species are

addressed. At the time of listing, the Service determined that without regular management, suitable habitat for this species would be quickly lost through the process of forest succession. The revised recovery plan identified the most critical biological constraint and need for the recovery of running buffalo clover as its dependence on disturbance to maintain filtered sunlight (Service 2007, p. 22). This requirement informed the recovery strategy of active management to remove competing vegetation and selectively remove trees to prevent overshadowing. Key to this recovery strategy was the protection and ecological management of various-sized populations throughout the species' geographic range. Small populations (C- and D-ranked populations) were included because they contribute as much as large populations to the overall level of the species' genetic diversity, which is important for survival of the species as a whole.

Currently, 22 populations meet this criterion, as follows: 2 A-ranked, 10 B-ranked, 6 C-ranked, and 4 D-ranked. There are 4 more B-ranked populations than required. Although these additional higher ranked populations can count for lower ranked populations, this criterion has still not been fully met. However, 66 additional populations occur on publicly owned lands, such as national forests, State lands, and local parks, thereby minimizing threats from habitat loss and degradation.

The forest management plans for both the Monongahela and Wayne national forests include direction and guidelines to avoid and minimize impacts of forestry practices on running buffalo clover. These forestry management practices, as conditioned through running buffalo clover measures included in their respective forest plans, are compatible with running buffalo clover conservation. The forest plans include forest-wide standards and guidelines; compliance with standards is mandatory.

The Wayne National Forest plan's standards for running buffalo clover require measures to protect populations during prescribed fire activities, avoid mechanical construction of firelines in known occupied habitat, and protect populations during road and trail construction, and a forest-wide guideline restricts application of herbicides within 25 feet of known running buffalo

clover populations (U.S. Forest Service 2006, p. 2–22). In addition, the Wayne National Forest signed a Memorandum of Understanding with the Service and the Ohio Department of Natural Resources in 2021 to ensure the protection and management of running buffalo clover by maintaining the appropriate level of disturbance, controlling invasive species, and ensuring the appropriate level of sunlight where running buffalo clover is found on the national forest.

The Monongahela National Forest plan includes standards to avoid conducting prescribed burns, constructing fuel breaks, and implementing activities, such as construction of new roads or ditching for pipelines, in running buffalo clover areas. Guidelines include implementing habitat management measures to maintain and restore running buffalo clover populations, timing maintenance mowing to benefit running buffalo clover, avoiding use of potentially invasive species for seeding/mulching, and monitoring the effects of grazing on running buffalo clover (U.S. Forest Service 2011, pp. II-27–II-28). Thus, although this criterion is not met in the manner specifically identified in the recovery plan, we conclude that the intent of the criterion to ensure that sufficient populations were protected from threats into the future has been met.

Regulatory Framework

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species is an “endangered species” or a “threatened species.” The Act defines an endangered species as a species that is “in danger of extinction throughout all or a significant portion of its range,” and a threatened species as a species that is “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” The Act requires that we determine whether any species is an “endangered species” or a “threatened species” because of any of the following factors:

- (A) The present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) Overutilization for commercial, recreational, scientific, or educational purposes;
- (C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

We must consider these same five factors in delisting a species. According to 50 CFR 424.11(e), we shall delist a species if the best scientific and commercial data available indicate that: (1) The species is extinct; (2) the species does not meet the definition of an endangered species or a threatened species; or (3) the listed entity does not meet the statutory definition of a species.

We use the term “threat” to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term “threat” includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term “threat” may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an “endangered species” or a “threatened species.” In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the

species—such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an “endangered species” or a “threatened species” only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

The Act does not define the term “foreseeable future,” which appears in the statutory definition of “threatened species.” Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term foreseeable future extends only so far into the future as we can reasonably determine that both the future threats and the species’ responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. “Reliable” does not mean “certain”; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

It is not always possible or necessary to define foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species’ likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species’ biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.

Summary of Biological Status and Threats

In this section, we review the biological condition of the species and its resources, and the influences to assess the species’ overall viability and the risks to that viability.

Habitat Destruction and Succession

The revised recovery plan for running buffalo clover (Service 2007, p. 14) identified the major threats to this species throughout its range as habitat destruction, habitat succession, and invasive plant competition (Factor A). Land development and the consequential loss of habitat can also be a threat to running buffalo clover. Natural succession from open to dense canopy in

forests within the range of running buffalo clover occurs over a 30- to 40-year time span, depending on the dominant species and aspect of the site. Because the species relies on periodic disturbances to set back succession and/or open the tree canopy to create and maintain the partial to filtered sunlight it requires, activities that interfere with natural disturbance processes can negatively affect populations of running buffalo clover. Conversely, activities that periodically set back natural succession can benefit the species.

Current logging practices may benefit running buffalo clover. At the Fernow Experimental Forest in north-central West Virginia, running buffalo clover is most often associated with skid roads in uneven-aged silvicultural areas (Madarish and Schuler 2002, p. 121). Populations may initially decrease after logging, but then rebound to higher than pre-disturbance levels (Madarish and Schuler 2002, p. 127).

Depending on the circumstances, it appears that both overgrazing and no grazing at all can be threats to running buffalo clover. In Kentucky, overgrazing poses threats to running buffalo clover, but removal of cattle from clover populations has resulted in overshading and competition from other vegetation (White *et al.* 1999, p. 10). Periodic grazing at the Bluegrass Army Depot has provided the moderate disturbance needed to maintain running buffalo clover (Fields and White 1996, p. 14).

Nonnative species, such as bluegrass (*Poa pratensis*) and white clover (*Trifolium repens*), compete with running buffalo clover for available resources (Jacobs and Bartgis 1987, p. 441). Other nonnative species that affect running buffalo clover include Japanese stiltgrass, garlic mustard (*Alliaria petiolata*), Japanese honeysuckle (*Lonicera japonica*), Amur honeysuckle (*Lonicera maackii*), and multiflora rose (*Rosa multiflora*). Threats by invasive competition can be mediated by treating the invasive plants by hand removal, herbicide application, and/or mowing. Although nonnative species are widespread across the range of running buffalo clover, not all running buffalo clover sites are affected by invasive species. For example, 14 of the 31 sites (45 percent) in Ohio have one or more nonnative species present at varying densities, and 8

of those sites are managed for invasive species control.

The habitat needs of running buffalo clover on Federal, State, and locally owned lands are often included in plans or agreements for those lands (Factor D). The Monongahela National Forest Land and Resource Management Plan (U.S. Forest Service 2011, pp. II-27–II-28) and Wayne National Forest Revised Land and Resource Management Plan (U.S. Forest Service 2006, pp. 2-22, D-16) both include habitat management and protection measures for running buffalo clover, as does the Wayne National Forest’s recently signed memorandum of understanding. The Bluegrass Army Depot in Kentucky protects and manages running buffalo clover under an Endangered Species Management Plan (Floyd 2006, pp. 30–37), included as part of their Integrated Natural Resource Management Plan, and all running buffalo clover populations at the Army Depot are covered by these management actions (Littlefield 2017). A memorandum of understanding between the Ohio Historical Society, Ohio Division of Natural Areas and Preserves, and the U.S. Fish and Wildlife Service provides for running buffalo clover habitat protection and management. These plans and agreements also provide for education and outreach efforts and surveying and monitoring for running buffalo clover. Some of these agreements automatically renew at the end of their 5-year period while others have the option to renew. The agreement with the Ohio Historical Society does not have an expiration date. We expect that these plans and agreements will remain in place and habitat management will continue after delisting running buffalo clover.

In total, 22 populations are under some form of management that incorporates specific needs of running buffalo clover, and 66 additional populations occur on publicly owned lands where regulatory mechanisms now exist that prevent loss from development (Factor D). Although the species benefits from active management, it does not appear to rely on management actions as demonstrated by the 59 populations that have been found over the last 10 years at sites where natural processes and/or various human activities are maintaining some suitable habitat for running buffalo clover. For these reasons, threats from habitat destruction,

habitat succession, and invasive species have been reduced or are being adequately managed such that they are not affecting the species' viability.

Collection

When the species was listed in 1987, overutilization for scientific or educational purposes (Factor B) was identified as a threat, given that only one population consisting of four individuals was known at the time (52 FR 21478, June 5, 1987). Today, with 175 populations known, collection for scientific or educational purposes is very limited and distributed among many populations and is no longer considered a threat (Service 2017, p. 17).

Running buffalo clover is listed as endangered or threatened under State laws in Missouri, Indiana, Ohio, and Kentucky (Factor D). The laws in Ohio and Missouri prohibit commercial taking of listed plants. We are aware of only one unpermitted collection in 2015 when a population in West Virginia appeared to have been dug up and the main plant group removed (Douglas 2015). The purpose of the collection is unknown. Despite this one event, running buffalo clover is not known to be used for any commercial or recreational purposes, and we have no information that commercial or recreational collection will occur in the future.

Disease

At the time of listing in 1987, disease (Factor C) was also predicted to threaten running buffalo clover (52 FR 21478, June 5, 1987). Jacobs and Bartgis (1987, p. 441) suggested that the decline of this species may have partially centered on a pathogen introduced from the exotic white clover; however, no specific disease has been identified over the intervening years (Service 2008, p. 10). A number of viral and fungal diseases, including cucumber mosaic virus and the comovirus, are reported to have attacked the species in greenhouses at the Missouri Botanical Garden (Sehgal and Payne 1995, p. 320), but no evidence has been gathered showing these viruses' impact on the decline of running buffalo clover in the wild (Service 2008, p. 10).

Parasitism

Parasitism by root-knot nematodes (*Meloidogyne* spp.) is common in clovers and often

limits productivity in cultivated clovers used as forage crops (Quesenberry *et al.* 1997, p. 270) (Factor C). Investigations have been conducted on the effects of root-knot nematodes on native North American clovers, including running buffalo clover. After inoculation of the parasite, running buffalo clover displayed high resistance to three of the four nematode species analyzed, and only an intermediate response to the fourth species of nematode (Quesenberry *et al.* 1997, p. 270). Thus, the threat from this parasite is not considered significant.

Herbivory

Herbivory by a variety of species has been reported for running buffalo clover (Factor C). In Missouri, running buffalo clover plants are repeatedly grazed by rabbits, rodents, and slugs (Pickering 1989, p. 3). Similar observations have been made in Kentucky (Davis 1987, p. 11). The Fayette County, West Virginia, population was eaten to the ground by a groundhog, but more than a dozen rooted crowns were observed at the population the following year. White-tailed deer can also consume large amounts of running buffalo clover (Miller *et al.* 1992, pp. 68–69). Although a population may be entirely consumed during a growing season, plants may return again the next year. The best available information indicates that herbivory is not a threat to the species.

Small Population Size

Running buffalo clover populations often display widely fluctuating population size (USFWS 2020, unpublished data). The cause for changes in population size may be due to disturbance, weather patterns, management strategy, natural succession, or other unknown factors. Small populations are at an increased risk of extirpation due to these stochastic events, which could impact all individuals in a small population (Factor E). The cyclic nature of running buffalo clover and the high probability of small populations disappearing one year and returning a subsequent year, may lead to difficulty in protecting small populations. However, the number (110) and distribution of C- and D-ranked populations now known across the species' range indicate that small population size is not a threat to the running buffalo clover.

Inadequate Seed Dispersal

The loss of large herbivores, such as bison and white-tailed deer, after European settlement may have resulted in no effective means of dispersal remaining for running buffalo clover (Cusick 1989, p. 477) (Factor E). Deer have now returned to pre-settlement numbers, but dispersal and establishment of new populations of running buffalo clover by white-tailed deer may not be significant (Ford *et al.* 2003, p. 427). With 175 occurrences of running buffalo clover now known, inadequate seed dispersal does not appear to be having population-level effects.

Poor Seed Quality

Although researchers have speculated that inbreeding depression may have contributed to the decline of running buffalo clover (Hickey *et al.* 1991, p. 315; Taylor *et al.* 1994, p. 1,099) (Factor E), selfed seeds have been shown to germinate well and develop into vigorous plants (Franklin 1998, p. 39). However, temporal variations in seed quality have been reported. Seed quality may be correlated with rainfall; quality decreases in years with unusually high rainfall (Franklin 1998, p. 38). With 175 occurrences of running buffalo clover now known, the impacts of poor seed quality do not appear to affect entire populations, nor do these impacts persist for any extended period of time.

Effects of Climate Change

Under future emission scenarios, including Representative Concentration Pathway (RCP) 4.5 and RCP 8.5, the effects of climate change in the foreseeable future are expected to result in rising average temperatures throughout the range of running buffalo clover, along with more frequent heat waves and increased periods of drought (Intergovernmental Panel on Climate Change (IPPC) 2014, p. 10), which may affect growth of running buffalo clover. For example, a prolonged drought in Missouri in 2012 may have impacted a running buffalo clover population for the next 2 years as plants were not observed again until 2015 (McKenzie and Newbold 2015, p. 20).

High-precipitation events are also expected to increase in number, volume, and frequency

in mid-latitude areas (IPCC 2014, p. 11). Several running buffalo clover populations are located within areas prone to flooding. Infrequent high-flow events create moderate disturbance, which may be beneficial for this species. But increasing the magnitude or frequency of high-flow events may increase storm flows and intensify disturbance from flood events, which may create excessive disturbance and alter the habitat suitability for running buffalo clover. In addition, increased annual precipitation may lead to decreased seed quality.

According to IPCC, “most plant species cannot naturally shift their geographical ranges sufficiently fast to keep up with current and high projected rates of climate change on most landscapes” (IPCC 2014, p. 13). Shifts in the range of running buffalo clover as an adaptation to climate changes are unlikely, due to the limited dispersal of seeds, restriction to specific habitat types, and the lack of connection between most populations.

The effects of climate change may also result in a longer growing season and shorter dormant season, which may change flowering periods. For example, blossoms of running buffalo clover have been turning brown at the beginning of June (Becus 2016); and in 2016 and 2017, running buffalo clover plants in Ohio began blooming in April, which is the earliest this species had been observed blooming (Becus 2017). For some plant species, a change in flowering period may create an asynchrony between prime bloom time and when specific pollinators are available, resulting in a reduction in pollination and subsequent seed set. However, because running buffalo clover can be pollinated by a diversity of bee species, significant asynchrony with pollinators is not expected to occur.

Climate change presents a largely unknown influence on the species, with potential for negative and beneficial impacts. Populations of running buffalo clover occur within various ecoregions within the species’ range and are capable of recovering from stochastic events, such as droughts and heavy precipitation and high stream flows. Running buffalo clover is not dependent on particular species of pollinators and appears adaptable to potential changes to pollinator communities. This indicates that populations will continue to be viable in the

foreseeable future in the face of climate change.

Synergistic Effects

Many of the stressors discussed in this analysis could work in concert with each other and result in a cumulative adverse effect to running buffalo clover (e.g., one stressor may make the species more vulnerable to the effects of other threats). However, most of the potential stressors we identified either have not occurred to the extent originally anticipated at the time of listing (collection, disease), are no longer a threat in light of the many populations discovered since the time of listing, or are adequately managed as described in this proposal to delist the species (habitat destruction and succession, invasive species). In addition, for the reasons discussed in this final rule, we do not anticipate stressors to increase on publicly owned lands or lands that are managed for the species.

Synergistic interactions are possible between the effects of climate change and effects of other threats, such as nonnative plant invasion. However, it is difficult to project how the effects of climate change will affect interaction or competition between species. Uncertainty about how different plant species will respond under a changing climate makes projecting possible synergistic effects of climate change on running buffalo clover too speculative. However, the increases documented in the number of populations since the species was listed do not indicate that cumulative effects of various activities and stressors are affecting the viability of the species at this time or into the future. Post-delisting monitoring will monitor the status of running buffalo clover and its habitat to detect any changes in status that may result from removing the species from the List of Endangered and Threatened Plants (50 CFR 17.12(h)).

Summary of Comments and Recommendations

In our proposed rule published on August 27, 2019 (84 FR 44832), we requested that all interested parties submit written comments on the proposal by October 28, 2019. We also requested public comments on the draft PDM plan. We contacted appropriate Federal and State agencies and other interested parties and invited them to comment on the proposal. In accordance

with our peer review policy published on July 1, 1994 (59 FR 34270) and our August 22, 2016, Director's Memorandum "Peer Review Process," we solicited expert opinion from five knowledgeable individuals with scientific expertise that included familiarity with the running buffalo clover and its habitat, biological needs, and threats.

During the comment period, we received 24 comments on the proposal to delist running buffalo clover and the draft PDM plan: 2 from peer reviewers, 4 from States, 2 from Federal agencies, and 16 from the public. All comments are posted at <http://www.regulations.gov> under Docket No. FWS-R3-ES-2018-0036. Some public commenters support the delisting of running buffalo clover; some did not state whether or not they support the delisting; and others do not support delisting, although a subset of these, including one State and one peer reviewer, would support downlisting to threatened status. We did not receive any requests for a public hearing.

We reviewed all comments we received from peer reviewers, States, Federal agencies, and the public for substantive issues and new information regarding running buffalo clover. Substantive information provided during the comment period is addressed below and, where appropriate, is incorporated directly into this final rule and the PDM plan.

State Comments

Section 4(b)(5)(A)(ii) of the Act states that the Secretary must give actual notice of a proposed regulation under section 4(a) to the State agency in each State in which the species is believed to occur, and invite the comments of such agency. Section 4(i) of the Act directs that the Secretary will submit to the State agency a written justification for his or her failure to adopt regulations consistent with the agency's comments or petition. We solicited comments from all States within the species' range and received comments from four States.

(1) Comment: The Office of Kentucky Nature Preserves commented that running buffalo clover is trending towards recovery and meets almost all the criteria specified in the recovery plan. They stated that only one cooperative agreement currently protects running buffalo clover in Kentucky and expressed concern that additional cooperative management agreements are

needed in Kentucky in order to fully meet delisting criterion 3. The Office of Kentucky Nature Preserves indicated that Kentucky plans to continue to implement additional management agreements and enroll more private lands with the registered natural area program.

Response: Although there is currently only one cooperative agreement protecting running buffalo clover in Kentucky, this agreement protects multiple running buffalo clover populations that occur at the site. We acknowledge that delisting criterion 3 has not been fully met in the manner specifically identified in the recovery plan. However, we conclude that the intent of the criterion to ensure that sufficient populations were protected from threats into the future has been met. Also, the discovery of new populations at unmanaged sites indicates that the species does not wholly rely on management to maintain populations, as we believed when the recovery criterion was drafted. Additional management agreements will contribute to the ongoing success of this species, and we appreciate Kentucky's commitment to continuing to work on and increase conservation of running buffalo clover.

(2) Comment: Missouri Department of Conservation (MDC) concurred with the proposal to delist running buffalo clover, but expressed concern that removing the protections of the Act may result in further decline of this species in Missouri. MDC stated that running buffalo clover will continue to be a State endangered species in Missouri until the State's populations are recovered.

Response: We appreciate Missouri's commitment to continuing conservation efforts for the running buffalo clover. State protections will continue to enhance populations of the species. In addition, management agreements will continue to maintain suitable habitat and address stressors at 22 running buffalo clover sites after the species is delisted. Therefore, we do not expect an overall decline in the status of running buffalo clover in the future.

(3) Comment: MDC indicated that populations in Missouri are not considered secure and that management is necessary to maintain populations and remove invasive species. MDC indicated that Missouri would continue management for running buffalo clover and would assess

the prioritization of ongoing management efforts and protected status of Missouri's populations.

Response: We agree that a lack of management or natural disturbance regime can lead to continued natural succession, a loss of suitable habitat, and a decline in running buffalo clover populations and that management efforts are necessary at some sites to address stressors and maintain suitable habitat. We appreciate the MDC's commitment to managing the populations of running buffalo clover in Missouri.

(4) Comment: Ohio Division of Natural Areas and Preserves stated that more management agreements are needed before criterion 3 for delisting is met and that downlisting to threatened is more appropriate at this time.

Response: Information obtained since the proposed listing rule was published on August 27, 2019, indicates there are currently 175 extant populations as follows: 18 A-ranked, 47 B-ranked, 40 C-ranked, and 70 D-ranked populations. Seven of the A-ranked and 14 of the B-ranked populations are considered viable, based on a PVA or 10 years of data. Based on this information, we conclude that sufficient number and distribution of viable populations occur across the species' range and delisting criteria 1 and 2 have been exceeded. We acknowledge that delisting criterion 3 has not been fully met in the manner specifically identified in the recovery plan. However, recovery of a species is a dynamic process, and we are not required to follow all of the guidance or meet all of the criteria provided in a recovery plan in order to conclude that a species no longer meets the definition of endangered or threatened.

The 22 populations currently under management agreements in conjunction with the 66 other populations on publicly owned lands are sufficient to eliminate or adequately reduce threats to the species now and into the foreseeable future. Additionally, the discovery of new populations at unmanaged sites indicates that the species does not wholly rely on management to maintain populations as we believed when the recovery criterion was developed. We conclude that threats to running buffalo clover have been reduced or are being adequately managed now and into the foreseeable future and that the intent of the criterion to ensure that sufficient

populations were protected from threats into the future has been met. Therefore, running buffalo clover does not meet the definition of a threatened species.

(5) Comment: The Ohio Division of Natural Areas and Preserves stated the long-term viability of running buffalo clover in Ohio is uncertain, based on threats from invasive species, management needs, and number of populations in the poor category. They indicated that there are draft agreements with partners to protect an additional 11 running buffalo clover populations and that these agreements are helping to make progress in long-term viability of running buffalo clover in Ohio.

Response: We agree that a lack of management or natural disturbance regime can lead to a decline in running buffalo clover populations and that site-specific management plans are necessary to address stressors and maintain suitable habitat at some sites. However, the discovery of new populations at unmanaged sites indicates that the species does not wholly rely on management to maintain populations. Twenty-two running buffalo clover sites are currently under management agreements. Additional management agreements will contribute to the ongoing success of this species, and we appreciate Ohio's commitment to continuing to work on and increase protections for the running buffalo clover populations within the State.

(6) Comment: West Virginia Division of Natural Resources (WVDNR) agreed that running buffalo clover populations are sufficiently distributed to provide for resiliency, redundancy, and representation. WVDNR stated that they provisionally agree with running buffalo clover delisting, provided that written management plans specific to the species are developed for public lands, and agencies managing for running buffalo clover commit to these plans through at least the delisting monitoring period. They noted that there is a draft running buffalo clover site-specific management plan for the Monongahela National Forest, which will substantively reduce threats to populations on this national forest once finalized.

Response: We acknowledge that some populations that occur on public land are not protected by running buffalo clover-specific management plans. However, some, including those

on Monongahela National Forest, are provided protection from the standards and guidelines in the resource management plans. Twenty-two additional running buffalo clover sites, nearly all of which occur on publicly owned lands, are currently protected by management agreements that provide specific measures to maintain habitat for the species. We expect that these will remain in place and habitat management will continue after delisting running buffalo clover. We support finalizing a site-specific management plan for running buffalo clover on the Monongahela National Forest to further enhance conservation of the species. Management agreements as currently written require frequent coordination with the Service. We have revised the PDM plan to include a reporting element on management actions during the PDM period for those sites with management plans or agreements in place.

(7) Comment: WVDNR reported that eight new element occurrences with a total of 13,000 to 15,000 rooted crowns were discovered after 2016, all on private land, but that those new occurrences are not protected because the State has no endangered species law and therefore should not count towards the number of occurrences cited within delisting criterion 1.

Response: Delisting criterion 1 is based solely on the condition of the populations without regard to protected status. However, because we have no information on the condition of each of those elemental occurrences, we did not include them in our calculations in this final rule regarding the number of populations that fulfill delisting criterion 1. These additional elemental occurrences support the trend of discovering new populations and recovery of this species.

(8) Comment: WVDNR did not agree with our conclusion that criterion 3 has been met for downlisting or delisting, stating that general natural resource management plans are not suitable for meeting the criterion.

Response: In the proposed listing rule, we had considered 9 populations that occur on the Monongahela National Forest as contributing to meeting this criterion because running buffalo clover is included in the forest management plan for the Monongahela. Although the forest plan provides direction and guidelines to avoid and minimize impacts of forestry practices on running

buffalo clover, we now understand that a draft agreement has been developed between the U.S. Forest Service and WVDNR to provide additional conservation for the species. While a management plan that provides for additional conservation of running buffalo clover would benefit the species on the Monongahela National Forest, the current forest management practices, as conditioned through running buffalo clover measures included in the forest plan, are adequate to conserve the running buffalo clover on the Monongahela.

We now consider 22 populations as protected by management agreements; therefore, the 17 management agreements under criterion 3 for downlisting have been exceeded. We acknowledge that the 34 management agreements specified by delisting criterion 3 have not been met although additional agreements are in draft form. Recovery of a species is a dynamic process, and we are not required to meet all of the criteria provided in a recovery plan in order to conclude that a species no longer meets the definition of endangered or threatened. Delisting criterion 3 from the recovery plan was intended to ensure that habitat-based threats for the species are addressed. However, the discovery of new populations at unmanaged sites indicates that the species does not wholly rely on management to maintain populations as we believed when the recovery criterion was drafted. Although criterion 3 has not been met as specified in the recovery plan, we believe that its intention has been met between the 22 sites managed for the conservation of the species and the 66 additional locations on Federal and State lands. Because nearly all of the 22 managed populations occur on publicly owned lands, we expect management will continue in the foreseeable future. While we agree that additional management agreements would further enhance conservation for running buffalo clover, the 22 populations currently under management in conjunction with the 66 other populations on publicly owned lands are sufficient to indicate the species is not in danger of extinction now or likely to become so in the foreseeable future. We have revised the PDM plan to include a measure to track new management agreements finalized during the PDM period as well as to determine if all existing management agreements are being followed.

(9) *Comment:* WVDNR stated that the number of running buffalo clover occurrences in West Virginia is increasing but many extant occurrences are at risk.

Response: We agree that some extant occurrences, in particular D-ranked populations (containing fewer than 29 plants), are at risk; and in some years, no plants may be present during monitoring periods. However, 89 percent of running buffalo clover populations that were extant in West Virginia in 2007 are still present today. Overall, 63 running buffalo clover populations occur in West Virginia, of which 46 (70.8 percent) are A-, B-, or C-ranked populations, which are at lower risk of extirpation.

(10) *Comment:* WVDNR observed that project-driven surveys have resulted in the discovery of new running buffalo clover occurrences and noted that implementation of these projects may result in the expansion of the distribution of running buffalo clover as well as the spread of nonnative invasive species. The State expressed concern that the threat of nonnative invasive species may exceed the benefit of discovery of any new running buffalo clover occurrences.

Response: We acknowledge the ongoing presence of nonnative invasive species at some running buffalo clover sites. However, at this time, the best available data do not support a conclusion that the spread of nonnative invasive species will exceed the benefit of new running buffalo clover discoveries at these sites. Further, we have determined that the 22 running buffalo clover populations with management agreements, which do not include these newly discovered sites, in conjunction with the 66 occurrences on publicly owned lands are sufficient to eliminate or adequately reduce threats to the species now and into the foreseeable future.

(11) *Comment:* WVDNR noted that management plans for running buffalo clover should address (1) controlling succession so canopy closure does not exceed 80 percent, (2) controlling nonnative invasive species, and (3) preventing damage to populations from road management or usage and other actions that could remove a population or its habitat.

Response: We agree with these recommendations for management actions in general.

Management plans are developed to address site-specific threats and ensure that actions are taken to maintain suitable habitat, including appropriate light levels. These management plans often include measures to control nonnative invasive species and prevent damage from multiple activities.

Federal Agency Comments

(12) Comment: The Monongahela National Forest in West Virginia provided information about soils on which running buffalo clover may occur. They suggested looking at running buffalo clover sites near road systems to determine if these populations could have been brought in from limestone quarries where a potential seed bed could have been established but may not be ideal for sustainability of the population. They also commented that temporary habitat for running buffalo clover can be created by periodic liming of forest soils but would not be sustainable.

Response: We agree with the comment that periodic liming of soils is not a sustainable activity and believe that there is enough habitat with suitable disturbance that liming is not needed. While seed is known to have been brought into sites through delivery of topsoil, we are unaware of any instances where seed has been transported from a quarry. We have incorporated additional information about soils into the **Background** section.

(13) Comment: The Wayne National Forest in Ohio commented that running buffalo clover will continue to receive protection for a minimum of 5 years after delisting as a species of conservation concern for the forest.

Response: We appreciate the Wayne National Forest's commitment to continuing to conserve running buffalo clover after the species is delisted. Continuing to manage running buffalo clover as a species of conservation concern on the Wayne National Forest will contribute to the ongoing success of this species.

Peer Review and Public Comments

(14) Comment: Two peer reviewers and several public commenters opined that the

species should be downlisted to threatened rather than delisted.

Response: Current information indicates there are currently 175 extant running buffalo clover populations as follows: 18 A-ranked, 47 B-ranked, 40 C-ranked, and 70 D-ranked populations. Seven of the A-ranked and 14 of the B-ranked populations are considered viable, based on a PVA or 10 years of data. Based on this information, we conclude that sufficient number and distribution of viable populations occur across the species' range and delisting criteria 1 and 2 have been exceeded. We acknowledge that delisting criterion 3 has not been fully met in the manner specifically identified in the recovery plan. However, recovery of a species is a dynamic process, and we are not required to follow all of the guidance or meet all of the criteria provided in a recovery plan in order to conclude that a species no longer meets the definition of endangered or threatened. The 22 populations currently under management agreements in conjunction with the 66 other populations on publicly owned lands are sufficient to indicate the species is not in danger of extinction now or likely to be in the foreseeable future. Additionally, the discovery of new populations at unmanaged sites indicates that the species does not wholly rely on management to maintain populations as we believed when the recovery criterion was drafted. We conclude that threats to running buffalo clover have been reduced or are being adequately managed now and into the foreseeable future and that the intent of the criterion to ensure that sufficient populations were protected from threats into the future has been met. Therefore, running buffalo clover does not meet the definition of a threatened species.

(15) Comment: One peer reviewer indicated that running buffalo clover is not fully understood, nor are the historic habitat conditions in which it lived. Therefore, additional research is needed before delisting the species.

Response: Recent discoveries of new running buffalo clover sites have expanded our understanding of habitat preferences for the species. In making listing decisions under the Act, we rely on the best available scientific and commercial data, including these recent discoveries, which have led us to conclude that running buffalo clover does not meet the definition of an

endangered or threatened species.

(16) Comment: One peer viewer noted that from 2001 to 2005 the number of running buffalo clover patches and rooted crowns at Blue Grass Army Depot (Depot) increased, mostly due to finding new patches. From 2005 to 2018, the number of patches and rooted crowns declined, likely due to the permanent loss of patches, indicating a long-term decline. Three public commenters also noted that the overall trend of running buffalo clover at the Depot has been declining since 2001, and one commenter indicated the cause of the decline is unknown.

Response: Although the number of patches at the Depot has decreased since 2005, the number of rooted crowns recorded in 2018 (3,939) is greater than that recorded in 2001 (1,160) but lower than the maximum observed in 2006 (9,574). Populations of this species fluctuate greatly and can decline for multiple years before rebounding. The populations that are now considered extirpated from the Depot were small, D-ranked populations. While the loss of patches could indicate an overall decline, the loss of small populations is not unexpected. Other landowners do not monitor by patch; therefore, it is difficult to compare this information to trends at other locations. However, we acknowledge that some protected populations have declined with no obvious cause. Notwithstanding these limited declines, we conclude that a sufficient number of populations across the range of the species will continue to be viable over the foreseeable future such that the species no longer meets the Act's definitions of an endangered species or a threatened species.

(17) Comment: One peer reviewer noted that running buffalo clover populations can appear, seem to prosper, and then disappear, including an A-ranked population, and many C- and D-ranked populations have disappeared.

Response: Running buffalo clover populations fluctuate over the years due to natural succession, variance in temperature and precipitation, and lack of disturbance. Due to their small size, D-ranked populations are most likely to disappear although larger populations have declined for unknown reasons. The PVA, conducted when the recovery plan was written,

indicated that 17 populations were needed to maintain this species. This number was doubled to 34 populations needed to delist running buffalo clover. Currently, 175 populations are extant throughout the range of this species. This includes 18 populations that have at least 1,000 rooted crowns (A-ranked). An additional 47 running buffalo clover populations have between 100 and 999 rooted crowns (B-ranked). These higher ranked populations have a greater probability of remaining stable or increasing.

(18) Comment: One peer reviewer and two commenters opined that more management agreements are needed before delisting running buffalo clover, and four commenters expressed concern whether current management is sufficient to maintain recovery.

Response: Comparing the ranking of extant populations in 2007 to the ranking of those populations that continued to be extant in 2016, 17 percent of populations were increasing, and 59 percent were stable. These populations represent 76 percent of the populations present in 2007. In addition, we are now aware of 175 extant populations compared to 102 in 2007. Thus, we conclude that the trend for this species is stable or increasing.

Twenty-two running buffalo clover populations are currently under agreements that provide for ongoing management to maintain suitable habitat for running buffalo clover and adequately address or eliminate threats to those populations. While we acknowledge that delisting criterion 3 has not been fully met in the manner specifically identified in the recovery plan, we conclude that the intent of the criterion to ensure that sufficient populations are protected from threats into the foreseeable future has been met. Additionally, the discovery of new populations at unmanaged sites indicates that the species does not wholly rely on management to maintain populations as we believed when the recovery criterion was drafted. Based on this information, we conclude that running buffalo clover has recovered and no longer meets the definition of an endangered or threatened species.

(19) Comment: Two peer reviewers and a commenter identified nonnative invasive species as an ongoing threat to running buffalo clover that requires management, and these

commenters specifically identified Japanese stiltgrass as causing declines of running buffalo clover.

Response: As discussed in the proposed listing rule and this final rule, nonnative invasive species, including Japanese stiltgrass, are present at several running buffalo clover sites. The management agreements in place for running buffalo clover include management actions to address nonnative invasive species, including Japanese stiltgrass. In addition, the PDM plan provides for monitoring for the presence of nonnative invasive species at running buffalo clover sites. Monitoring includes recording the level of severity of nonnative invasive species to prioritize sites for future monitoring.

(20) Comment: One peer reviewer and three commenters expressed concern that running buffalo clover would no longer receive management or monitoring and that funding for efforts to maintain proper habitat conditions would not be available after delisting.

Response: The populations that are under management agreements will continue to receive management to address site-specific threats and habitat needs, and we do not expect delisting will alter the ability of partner agencies to continue funding and implementing management agreements for running buffalo clover. Several States have indicated that they will continue to protect and manage running buffalo clover populations under existing State regulations. If unforeseen threats arise that are determined to endanger or threaten the long-term viability of running buffalo clover such that it meets the definition of a threatened or endangered species, we can use our authorities under section 4 the Act, including the emergency listing authorities at section 4(b)(7), to relist the species as appropriate.

(21) Comment: One peer reviewer and several commenters expressed concern that many populations of running buffalo clover are not stable or secure and that the species' recovery is a result of more surveys.

Response: Many populations of running buffalo clover have been discovered since 2007, with 175 extant populations known now compared to 102 in 2007. Seventy-six percent of the

populations extant in 2007 were increasing or stable in 2016, indicating those populations are not in decline. With 22 populations now under management agreements and another 66 populations occurring on publicly owned lands, threats to the species have been reduced or are being adequately managed such that they are not affecting the species' viability. Based on this information, we conclude that running buffalo clover has recovered and no longer meets the definition of an endangered or threatened species.

(22) Comment: One commenter stated that the methods for assessing viability prescribed in the Recovery Plan do not address the stress caused by invasion of exotic species or other emerging or impending factors that might impair the viability of the species.

Response: The PVA is just one factor used to consider the current trend of the species and whether it is declining, stable, or increasing. The PVA provides a guide in determining the minimum number of needed populations, as well as the size and physical distribution of those populations, and is only one part of the recovery criteria. In addition, recovery criterion 3 addresses habitat-based threats, such as nonnative invasive species. The 22 populations that have management agreements will be protected from the threat of succession by implementation of various management or disturbance actions to reset succession. The management agreements also include actions to address the threats of nonnative invasive species.

(23) Comment: One commenter stated that populations in West Virginia are extensive and cover a wide range of habitat conditions, indicating that running buffalo clover may not be as limited in habitat requirements.

Response: Running buffalo clover populations in West Virginia are larger in quantity and area and occur in a wider range of habitat types than populations in other States. We note that all habitats are subject to succession, requiring periodic natural disturbance or targeted management to continue to maintain viable running buffalo clover populations.

(24) Comment: One commenter stated that running buffalo clover was once widespread and abundant but most of the historically known sites are now extirpated and the species survives

in a fraction of its former range.

Response: Running buffalo clover was not known historically as widespread and abundant. Fewer than 30 sites were known in 8 States, including 2 specimens from Arkansas and 1 from Kansas (Brooks 1983). Although most of these historically known sites are extirpated, 175 extant running buffalo clover sites are now known across most of its historical range in 6 States.

(25) Comment: One commenter stated that, although more than 150 occurrences are now known, the vast majority of those are very small and not ranked as good occurrences.

Response: Delisting criterion 1 states that 34 populations, in total, are distributed as follows: 2 A-ranked, 6 B-ranked, 6 C-ranked, and 20 D-ranked populations across at least 2 of the 3 regions in which running buffalo clover occurs (Appalachian, Bluegrass, and Ozark). The number of populations in each rank is based on what would be required to achieve a 95 percent probability of the persistence within the next 20 years.

Populations are currently distributed as follows: 18 A-ranked, 47 B-ranked, 40 C-ranked, and 70 D-ranked. Although approximately two-thirds of running buffalo clover populations are ranked as C or D (99 or few rooted crowns or 33 or fewer crowns, respectively), delisting criterion 1 has been substantially exceeded. We conclude that a sufficient number of populations across the range of the species will continue to be viable over the foreseeable future; thus, we determine that the species no longer meets the Act's definitions of an endangered species or a threatened species.

(26) Comment: One commenter expressed concern that small patches have a high probability of becoming extirpated and will not naturally recover without active restoration and management.

Response: Smaller populations may have a greater probability of becoming extirpated, but that does not indicate that all small populations will eventually become extirpated. Some small populations have continued to persist for years.

As a disturbance-adapted species, running buffalo clover benefits from both management as well as natural disturbance activities, such as flooding, grazing by herbivores, trail use by animals, and small forest openings due to disease or insect impacts. Ten C- and D-ranked populations are under management agreements.

(27) Comment: One commenter stated that monitoring and collection has shown an expansion of populations in multiple States.

Response: New populations have been found in multiple States since the time of the original listing, as a result of multiple statewide and many project-specific surveys. For example, an increase in project-specific surveys in Pennsylvania in recent years resulted in most of the new running buffalo clover populations identified there. The newly discovered populations in Pennsylvania are south of a population in West Virginia that we have been aware of since the 2007 Recovery Plan Revision. In addition, running buffalo clover sites occur in West Virginia southeast of these Pennsylvania populations. Therefore, these populations most likely have been in existence, and their discovery is not the result of an expansion in the range of this species but rather an increase in the number of project-specific surveys. That said, this new information about these additional sites changes our understanding of the degree to which this species faces threats to its continued existence. The species is not as rare or restricted as was thought at the time of listing, and this is a contributing piece of our overall determination that the species is no longer in danger of extinction, now or in the foreseeable future.

(28) Comment: One commenter, citing Leugers (2016), stated that running buffalo clover in Ohio still experiences declines in remaining areas and is in need of more robust management plans.

Response: Leugers (2016) included no information from the 2008 or 2011 5-year reviews and did not use the most recent scientific information available. Since the 2007 Recovery Plan, we have learned much about running buffalo clover. Populations in Ohio include two that are A-ranked and nine that are B-ranked. Seven sites in Ohio are protected with management

agreements for ten running buffalo clover populations.

(29) Comment: One commenter stated that additional information is still needed on the best management regimes to maintain flowering populations.

Response: Although recent discoveries of new running buffalo clover sites have expanded our understanding of the habitat types where the species can occur, running buffalo clover still requires partial to filtered sunlight and a prolonged pattern of moderate, periodic disturbance to maintain those conditions. A variety of management tools, such as grazing, mowing, trampling, or selective logging, have proven effective at maintaining suitable habitat and sustaining running buffalo clover populations. Natural succession results in increased canopy closure and a decrease in flowering. Maintaining appropriate habitat should result in continued flowering although the level of flowering may also be impacted by rainfall and various local weather conditions.

(30) Comment: One commenter indicated that running buffalo clover will continue to be threatened by ATV (all-terrain vehicle) use and fossil fuel development and infrastructure on the Wayne National Forest.

Response: Although ATV use was a problem at one site on the Wayne National Forest in the past, ATV use has not been documented as a threat to this running buffalo clover population since 2009. Running buffalo clover will continue to be managed on the Wayne National Forest as a species of conservation concern.

(31) Comment: One commenter indicated that running buffalo clover is damaged by grazing on Federal lands.

Response: We are not aware of any instances where grazing on Federal lands is impacting the running buffalo clover at the population level. Light to moderate grazing can provide the disturbance that running buffalo clover requires. The Depot in Kentucky grazes domesticated animals for management purposes, but no other federally owned properties use grazing by domesticated animals as a management tool. Running buffalo clover does not occur on any

federally owned property that permits large-scale grazing.

(32) Comment: One commenter stated that there has been no measurable increase or spread of running buffalo clover (e.g., to Pennsylvania).

Response: New populations of running buffalo clover are discovered nearly every year. That said, these populations have most likely been in existence for some time, and new populations found in Pennsylvania are not likely to be the result of an expansion in the range of this species. However, the increase overall in the number of populations known to be in existence changes our understanding of the degree to which the species is in danger of extinction, now or in the future. The original listing of the species was based on the lack of extant populations that had been identified at that time in spite of surveys conducted throughout its known range. Since then, multiple statewide and many project-specific surveys have been conducted and have discovered additional populations of which we were not formerly aware. Currently, 175 extant populations are known.

(33) Comment: One commenter indicated that several element occurrence (EO) ranks are erroneous.

Response: We have used the best scientific and commercial data available in the proposed rule and this final rule. The commenter did not provide any supporting documentation or information for specific EOs.

(34) Comment: One commenter indicated that seeds of running buffalo clover maintained in appropriate storage for over 25 years can still be viable after scarification. The commenter stated that recovery work should include vouchering seed from each running buffalo clover population to a seed bank with clear origin and sample size details.

Response: Running buffalo clover seed in the seedbank may be viable for a long time as other rare legumes can be viable in cold storage for decades (Albrecht 2017). An extremely small amount of running buffalo clover seed can germinate after being in soil and exposed to outdoor temperatures for over 10 years (Baskin 2021). In addition, populations have been absent for up to

4 consecutive years before plants were observed again (USFWS 2021, unpublished data). The long-term limit of seed viability in the natural environment has not been determined as Baskin's research ended after 11 years. Collection of seed for vouchering purposes may be useful for its conservation and management and should have limited impacts to source populations. Because the best available scientific and commercial data indicate that running buffalo clover has recovered and is no longer an endangered or threatened species, we are finalizing the delisting of the species.

(35) Comment: One commenter noted that running buffalo clover grows readily in controlled settings. Another public commenter stated that the survival of transplanted plants in the wild is very low and not a successful recovery option.

Response: Running buffalo clover grows well in a greenhouse environment; however, planting from seed or transplanting in the wild has had very limited success. Collection of seed or other vegetative material should be used only as a last resort to maintain genetic material before a population is permanently lost.

Peer Review and Public Comments on the Post-delisting Monitoring Plan

(36) Comment: WVDNR stated that the 5-year monitoring period will not detect changes in status of running buffalo clover in time to allow for remedial actions if populations decline and suggested that monitoring the occurrences in the Monongahela National Forest management plan annually for 5 years would reflect running buffalo clover population trend and response to management actions.

Response: We recognize that there can be significant year-to-year variation in populations that may cause long-term population trends not to become apparent for more than 5 years. However, by evaluating the level of canopy coverage and the threat of nonnative invasive species as prescribed in the PDM plan, these threats can be addressed before impacts to running buffalo clover occur. Monitoring is conducted to determine the rangewide status of running buffalo clover (declining, stable, or increasing) and its threats. It is not intended to evaluate

individual management actions.

We have modified the PDM plan to target the running buffalo clover populations with management plans or agreements and the viable A- and B-ranked populations plus an additional 20 populations rangewide for monitoring. Because approximately 50 percent of all running buffalo clover populations are on private land, we recommend that half of the populations identified for post-delisting monitoring rangewide also occur on private land. Therefore, these 57 populations that are monitored should be representative of the rangewide ownership (private versus public) and as well as the rangewide diversity of population size (A-, B-, C-, and D-ranked populations).

(37) Comment: WVDNR indicated that the PDM plan should include visiting a select group of running buffalo clover occurrences, with the majority on public land, which would provide data on those populations' responses to management for control of succession and nonnative invasive species and protection from habitat destruction.

Response: The goal of the monitoring plan is to observe the trends of a representative sample of individual occurrences to determine whether the species continues to be recovered and not to evaluate management activities. Because most populations are not monitored, the selection of a group of occurrences should reflect the proportion of sites that are managed as well as a diversity of population sizes. There should be a representative number of A-, B-, C-, and D-ranked populations monitored. We have incorporated this concept into the PDM plan, where appropriate.

(38) Comment: WVDNR commented that the monitoring protocol and field monitoring form in the draft PDM plan are not adequate and are inconsistent with the monitoring protocol in the 2007 Running Buffalo Clover Recovery Plan. They recommended using the existing census methodology to provide more consistency and better detect population trends and declines.

Response: We acknowledge that the protocol in the PDM plan differs from that in use since 2007. While the existing methodology would provide more consistency in comparing

individual populations pre- and post-delisting, we note that there are substantially more running buffalo clover populations now than in 2007. The protocol in the PDM plan addresses the challenges of limited time and resources to monitor a much larger number of populations. In addition, the proposed protocol reflects the greater stability of large A-ranked populations and prioritizes monitoring of smaller ranked populations as these would be more likely not to survive a stochastic event without a significant reduction in size.

Currently, the number of A-, B-, C-, and D-ranked populations are counted and evaluated. If a population drops to a lower rank (e.g., from an A-rank to a B-rank), we consider that change to constitute a decline. Because there is annual variability, we do not evaluate the specific individuals of each occurrence. By calculating the change in the number of A-, B-, C-, and D-ranked populations at the end of the 5-year post-delisting monitoring period, we will be consistent with how the species was evaluated in each of the last 5-year reviews. Therefore, we conclude that the data to be collected will be adequate to determine population rankings and rangewide population trends for post-delisting monitoring purposes. However, we see benefit to the more intensive monitoring suggested by WVDNR by those who are committed to managing the species post-delisting and support any efforts to do so.

(39) Comment: WVDNR recommended an expansion of data gathering about nonnative invasive species across running buffalo clover's range.

Response: The purpose of the nonnative invasive species query in the PDM plan is to determine whether nonnative invasive species present a threat at running buffalo clover occurrences and if that threat is being addressed. We understand that additional information on nonnative invasive species would be useful. However, due to limited time and resources, this is beyond the scope of the PDM plan.

(40) Comment: WVDNR stated that use of 95 percent canopy closure is insufficient as a trigger for selective harvest and suggests that the trigger should not be greater than 80 percent canopy cover.

Response: Because running buffalo clover grows in the ground layer, it can be affected by shading from the understory as well as the canopy. The 95 percent canopy cover is used as a trigger for selective harvest because we expect selective harvesting would significantly reduce canopy cover. Other forms of management can be considered before a site reaches 95 percent canopy cover as these other forms of management are not expected to reduce the canopy cover as dramatically. We have updated the PDM plan to clarify.

(41) Comment: One peer reviewer stated that the monitoring plan does not ensure an adequate level of management.

Response: The PDM plan is intended to determine whether a significant number of running buffalo clover occurrences are in decline or are stable or increasing and will focus primarily on those sites that meet all aspects of recovery. Monitoring will help evaluate whether management is needed, but the PDM plan does not require management. The monitoring data form will ask if appropriate management is occurring.

(42) Comment: One peer reviewer recommended changing the definition of “response triggers” to require monitoring more sites for a longer period of time.

Response: Due to the limitation of time and resources, additional monitoring is not feasible for most sites. While we encourage more frequent monitoring at sites that have that capability, the level of monitoring prescribed in the PDM plan is sufficient to assess the population trend of running buffalo clover for the purposes of post-delisting monitoring, which is to determine the rangewide status of running buffalo clover (declining, stable, or increasing) and its threats to evaluate whether the species continues to be recovered.

Determination of Running Buffalo Clover Status

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of an endangered species or a threatened species. The Act defines “endangered species” as a species “in danger of extinction throughout all or a significant portion of its range,” and “threatened

species” as a species “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” The Act requires that we determine whether a species meets the definition of “endangered species” or “threatened species” because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.

Status Throughout All of Its Range

After evaluating threats to the species and assessing the cumulative effect of the threats under the section 4(a)(1) factors, we found that significant threats identified at the time of listing (52 FR 21478, June 5, 1987) have been eliminated or reduced. The main threat at many sites is habitat destruction, habitat succession, and competition with nonnative invasive species (Factor A). Management to benefit running buffalo clover has been implemented since the time of listing and has shown to be effective. Twenty-two populations are under some form of management that addresses the needs of running buffalo clover. Because all of the managed populations occur on publicly owned lands, we expect management will continue in the foreseeable future. Delisting criterion 3 from the recovery plan was intended to ensure that habitat-based threats for the species are addressed. Although this criterion has not been met as specified in the recovery plan, we believe that its intention has been met between the 22 sites managed specifically for the conservation of the species plus the 66 additional locations on Federal and State lands.

Additionally, the discovery of new populations at unmanaged sites indicates that the species does not wholly rely on management to maintain populations as we believed when the recovery criterion was drafted. The 22 populations currently under management agreements in conjunction with the 66 other populations on publicly owned lands are sufficient to eliminate or adequately reduce threats to the species now and into the foreseeable future. During our analysis, we found that other factors believed to be threats at the time of listing—including overutilization

for commercial, recreational, scientific, or educational purposes (Factor B), disease and predation (Factor C), and inbreeding depression and poor seed quality and dispersal (Factor E)—are no longer considered threats, and we do not expect any of these conditions to substantially change into the foreseeable future. Since listing, we have become aware of the potential for the effects of climate change (Factor E) to affect all biota, including running buffalo clover, but the magnitude and frequency of this potential threat are generally unknown at this time. While available information in the most recent 5-year review indicates that running buffalo clover may be responding to a change in temperatures or precipitation patterns, the lack of a declining trend in running buffalo clover populations suggests the effects of ongoing climate change are not a threat to the species within the foreseeable future. Thus, after assessing the best available information, we determine that running buffalo clover is not in danger of extinction now or likely to become so in the foreseeable future throughout all of its range.

Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. Having determined that running buffalo clover is not in danger of extinction or likely to become so in the foreseeable future throughout all of its range, we now consider whether it may be in danger of extinction or likely to become so in the foreseeable future in a significant portion of its range—that is, whether there is any portion of the species’ range for which it is true that both (1) the portion is significant; and (2) the species is in danger of extinction now or likely to become so in the foreseeable future in that portion. Depending on the case, it might be more efficient for us to address the “significance” question or the “status” question first. We can choose to address either question first. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the other question for that portion of the species’ range.

In undertaking this analysis for running buffalo clover, we chose to address the status

question first—we considered information pertaining to the geographic distribution of both the species and the threats that the species faces to identify any portions of the range where the species is endangered or threatened.

For running buffalo clover, we considered whether the threats are geographically concentrated in any portion of the species' range at a biologically meaningful scale. We examined the following threats: habitat destruction, habitat succession, and competition with nonnative invasive species, including cumulative effects. Threats from habitat destruction have been identified at running buffalo clover sites across its range. Habitat succession is a natural process that occurs in multiple habitat types across the species' range. Nonnative invasive species are widespread across the range of running buffalo clover. We found no concentration of threats in any portion of the running buffalo clover's range at a biologically meaningful scale. Therefore, no portion of the species' range can provide a basis for determining that the species is in danger of extinction now or likely to become so in the foreseeable future in a significant portion of its range, and we find the species is not in danger of extinction now or likely to become so in the foreseeable future in any significant portion of its range. This is consistent with the courts' holdings in *Desert Survivors v. Department of the Interior*, No. 16-cv-01165-JCS, 2018 WL 4053447 (N.D. Cal. Aug. 24, 2018), and *Center for Biological Diversity v. Jewell*, 248 F. Supp. 3d , 946, 959 (D. Ariz. 2017).

Determination of Status

Our review of the best available scientific and commercial information indicates that running buffalo clover does not meet the definition of an endangered species or a threatened species in accordance with sections 3(6) and 3(20) of the Act. Therefore, we are removing running buffalo clover from the List of Endangered and Threatened Plants.

Effects of this Rule

This rule revises 50 CFR 17.12(h) to remove the running buffalo clover from the Federal List of Endangered and Threatened Plants. Because critical habitat has not been designated for

this species, this rule does not affect 50 CFR 17.96. On the effective date of this rule (see **DATES**, above), the prohibitions and conservation measures provided by the Act, particularly through sections 7 and 9, no longer apply to this species, and Federal agencies are no longer required to consult with the Service under section 7 of the Act in the event that activities they authorize, fund, or carry out may affect the running buffalo clover.

Post-delisting Monitoring

Section 4(g)(1) of the Act requires us, in cooperation with the States, to implement a system to monitor effectively, for not less than 5 years, all species that have been recovered and delisted. The purpose of this post-delisting monitoring is to verify that a species remains secure from risk of extinction after it has been removed from the protections of the Act. The monitoring is designed to detect the failure of any delisted species to sustain itself without the protective measures provided by the Act. If, at any time during the monitoring period, data indicate that protective status under the Act should be reinstated, we can initiate listing procedures, including, if appropriate, emergency listing under section 4(b)(7) of the Act. Section 4(g) of the Act explicitly requires us to cooperate with the States in development and implementation of post-delisting monitoring programs, but we remain responsible for compliance with section 4(g) of the Act and, therefore, must remain actively engaged in all phases of post-delisting monitoring. We also seek active participation of other entities that are expected to assume responsibilities for the species' conservation post-delisting.

We prepared a PDM plan for running buffalo clover in cooperation with the States. The PDM plan is designed to verify that running buffalo clover remains secure from the risk of extinction after delisting by detecting changes in its status and habitat throughout its known range. The final PDM plan discusses the current status of the taxon and describes the methods to be used for monitoring after the taxon is removed from the Federal List of Endangered and Threatened Plants. The PDM plan: (1) Summarizes the roles of the PDM cooperators; (2) summarizes the status of running buffalo clover at the time of delisting; (3) discusses monitoring

methods and sampling regimes; (4) describes frequency and duration of monitoring; (5) defines triggers for potential monitoring outcomes; (6) outlines reporting requirements and procedures; and (7) proposes a schedule for implementing the PDM plan and conclusions of the PDM effort.

The PDM plan guides monitoring of running buffalo clover following similar methods to those used prior to delisting. Monitoring will consist of: counting (or estimating for A-ranked populations) the number of rooted crowns and flowering stems, recording recruitment of seedlings, photographing running buffalo clover occurrences, mapping the location of individual patches within the occurrences, and identifying potential threats, as may be appropriate. PDM will begin in the first growing season following the effective date of this rule (see **DATES**, above) and will extend, at a minimum, through the fifth growing season following delisting. Monitoring through this time period will allow us to address potential negative effects to running buffalo clover, such as nonnative invasive species and canopy closure.

The PDM plan identifies measurable management thresholds and responses for detecting and reacting to significant changes in the running buffalo clover's habitat, distribution, and persistence. If monitoring detects declines equaling or exceeding these thresholds, the Service, in combination with other PDM participants, will investigate causes of these declines, including considerations of habitat changes, nonnative invasive species, stochastic events, or any other significant evidence. Such investigation will determine if running buffalo clover warrants expanded monitoring, additional habitat management, or relisting as an endangered or a threatened species under the Act. If such monitoring data or an otherwise updated assessment of threats indicate that relisting running buffalo clover is warranted, emergency procedures to relist the species may be followed, if necessary, in accordance with section 4(b)(7) of the Act.

The final PDM plan is available on <http://www.regulations.gov> under Docket No. FWS-R3-ES-2018-0036 and on the Service's Great Lakes Region website at <https://www.fws.gov/midwest/endangered/plants/rbcl/index.html>.

Required Determinations

National Environmental Policy Act

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), need not be prepared in connection with regulations pursuant to section 4(a) of the Act. We published a notice outlining our reasons for this determination in the *Federal Register* on October 25, 1983 (48 FR 49244).

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. We are not aware of running buffalo clover occurring on any Tribal lands, and we did not receive any comments from Tribes on the proposed delisting rule.

References Cited

A complete list of all references cited in this rule is available at <http://www.regulations.gov> at Docket No. FWS-R3-ES-2018-0036, or upon request from the Ohio Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this rule are staff members of the Service's Ohio Ecological Services Field Office and Great Lakes Regional Office, Bloomington, Minnesota.

Signing Authority

The Director, U.S. Fish and Wildlife Service, approved this document and authorized the undersigned to sign and submit the document to the Office of the Federal Register for publication electronically as an official document of the U.S. Fish and Wildlife Service. Martha Williams, Principal Deputy Director Exercising the Delegated Authority of the Director, U.S. Fish and Wildlife Service, approved this document on August 3, 2021, for publication.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as follows:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

1. The authority citation for part 17 continues to read as follows:

AUTHORITY: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

§ 17.12 [Amended]

2. Amend §17.12 in paragraph (h) by removing the entry for “*Trifolium stoloniferum*” under FLOWERING PLANTS from the List of Endangered and Threatened Plants.

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